

The susceptibilities of gram-positive organisms towards beta-lactam were low. Susceptibilities of cloxacillin, ampicillin and penicillin were 60% (9/15), 26.3% (5/19) and 34.8% (8/23) respectively. Among all gram-negative organisms, only 13 (65%) of them were sensitive to ceftazidime during the whole study period. Such susceptibilities were observed to be decreasing from 75% in 2001-2004 period to 58.3% in 2005-2008 period. This is closely related to the emergence of extended-spectrum beta-lactamase (ESBL). On the other hand, amikacin enjoyed a reasonably high susceptibilities rate of 82.1% (23/28).

Underlying disease, duration and severity of neutropenia, use of antibiotic prophylaxis or steroid, infective focus are not associated with the type of organism.

**Conclusion:** In contrast to worldwide trend, gram-negative bacteremia is increasingly more common. Ceftazidime monotherapy may be insufficient as the empirical antibiotic due to rising resistance among gram-negative organisms. Moreover, most gram-positive organisms are resistant to beta-lactam. Therefore, the combination of beta-lactam/beta-lactamase inhibitor and an aminoglycoside, is a reasonable choice that cover most of the pathogens causing bacteremia in our paediatric oncology centre.

### **Effects of Chelators (Desferal, Deferiprone & Deferasirox) on the Growth of Klebsiella and Aeromonas Isolated from Transfusion Dependent Thalassaemia Patients**

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Infection is among the leading causes of death for thalassaemia major patients. The known predisposing factors of infection include prior splenectomy, iron overload and use of iron chelator such as desferal (desferrioxamine). While encapsulated organisms frequently found in splenectomized patients were readily controlled by prophylactic vaccination and vigilant antibiotic treatment, ferrophilic organisms such as Yersinia and Klebsiella remains common among Thalassaemic patients. The inductive iron overloaded environment favours the growth of these organisms but their growth is also affected by the environment temperature. For example, Yersinia infection is more prevalent in temperate regions and Klebsiella infection is commonly found in subtropical areas. Furthermore, the use of iron chelator in the form of desferal further aggravates the risk of Yersinia infection. It is because the iron membrane transport protein siderophore found in desferal can be adopted by the bacteria for iron acquisition.

However, oral chelators such as deferiprone do not enhance growth of Yersinia *in vitro* or *in vivo*. In order to find out whether such observation can be extended to Klebsiella and Aeromonas infection, *in vitro* culture assay using Klebsiella pneumoniae and Aeromonas hydrophila obtained directly from our transfusion dependent thalassaemic patients were performed. The growth rates of the bacteria under iron rich, iron poor with or without different chelators were assessed. The growth rates were analyzed by both: (1) optic density of bacterial broth; and (2) colony count by bacterial agar plate. We found that the growth of Klebsiella was marginally enhanced by desferal *in vitro* when compared to Yersinia. Such unfavourable effect was not found in either deferiprone or deferasirox *in vitro*. On the other hand, the growth of Aeromonas was not affected by the presence of any of the 3 chelators. Therefore, we suggested that factors other than desferal may account for the increase prevalence of Klebsiella and Aeromonas infection among Asian thalassaemic patients. It also suggests that oral chelators are safe for thalassaemic patients during febrile illness. Unlike desferal, withholding iron chelator during infectious period may not be mandatory. But care has to be exercised especially for patients on deferiprone, since neutropenia has to be ruled out during febrile illness.

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### **Oral Presentation (Nurse's Session)**

#### **Extending Ventilator Circuit Change from 7 Days to 14 Days in a Neonatal Intensive Care Unit**

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**Introduction:** Ventilator associated pneumonia (VAP) is one of the most common nosocomial infection in Neonatal Intensive Care Unit (NICU) in Hong Kong. It is associated with increased mortality and length of stay. In the past, ventilator circuit were thought to be one of the main factors in causing VAP and ventilator circuits were changed frequently. Changing of ventilator circuit occupies a large volume of nursing time. Now it is well known that VAP is mainly associated with aspiration of the contaminated oropharyngeal secretions or esophageal reflux from the stomach. Researches in adult population favoured less frequent changes too.

**Intervention:** The use of ventilator circuit were extended from 7 days to 14 days for both invasive (intubated) and non-invasive (nasal Prong) ventilation from February 2007.

**Aim:** The aim of this study is to test whether extending